

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

Entergy Louisiana LLC
Perryville Generating Station
Sterlington, Ouachita Parish, Louisiana
Agency Interest Number: 85793
Activity Number: PER20050001
Proposed Permit Number: 2160-00112-V3

I. APPLICANT

Company:

Perryville Generating Station
101 Boardman Ave
Sterlington, Louisiana 71280

Facility:

Entergy Louisiana LLC
11140 Hwy 165 N
Sterlington, Ouachita Parish, Louisiana
Approximate geographic coordinates: 92° 1' 3" West, 32° 4' 34" North

II. FACILITY AND CURRENT PERMIT STATUS

The Perryville Generating Station has two combined cycle power generators. These consist of a natural gas-fired combustion turbine, which is followed by a heat recovery steam generator (HRSG), which consists primarily of a steam turbine. In addition to the combustion turbine, duct burners are utilized to provide supplemental heat to the HRSG unit. Physically, as well as for permitting purposes, the duct burner emissions are combined with those of the combustion turbines, Emission Pts. 1-1 and 1-2, prior to treatment, while the steam turbine produces no emissions. The facility also has one simple cycle natural gas-fired combustion turbine, Emission Pt. 2-1, and a cooling tower, Emission Pt. 9-0.

The duct burners are equipped with low NO_x burners. The combustion turbines are also regarded by LDEQ as low NO_x devices. To further reduce emissions of nitrogen oxides, the combined cycle units, Emission Pts. 1-1 and 1-2, are equipped with selective catalytic reduction (SCR) units, which treat the exhaust from the combustion turbines and duct burners. Ammonia is injected to the SCR unit to facilitate the conversion of NO_x to N₂. Emissions of unreacted ammonia are assigned to the combustion turbines. Anhydrous ammonia is stored on-site in a 5000 gallon pressurized vessel.

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Additional ancillary equipment includes a 500 kW emergency generator, a 180 hp diesel fire pump engine, a 10 MM BTU/hr fuel heater, and a number of diesel and lube oil storage tanks. This auxiliary equipment is permitted under insignificant activities.

The combined cycle turbine units are typically used to supply base load, while the simple cycle unit is used to supply peak demand. The latter unit is limited to 6000 hours of operation annually. Perryville Generating Station is capable of generating 725 megawatts (MW) of electrical power.

BACT has been employed at the Perryville Generating Station. Based on the BACT analysis presented in PSD-LA-655, the technologies selected to control PM₁₀, NO_x, CO, and VOC emissions from the combustion sources were the use of low NO_x burners, SCR, good combustion practices, and clean burning natural gas as fuel. As allowed in PSD-LA-655, SCR was applied only to the combined cycle turbines and duct burners and not to the simple cycle turbine, while the remaining technologies were applied to all the combustion sources. Drift eliminators were determined as BACT for PM₁₀ emissions from the cooling tower. While the currently defined BACT still applies to all the affected units, in the case of the combustion devices, turbines and duct burners, separate BACT based limits are needed to account for SU/SD.

In the case of the combined cycle units, the SCR units are not active until the exhaust stream temperature reaches the minimum required for SCR. In addition, the combustion turbines generate higher emissions during SU than periods of normal operation. The actual values for the proposed revisions in maximum hourly emission rates for NO_x, CO and VOC (to reflect SU/SD) are based on CEMS data and/or manufacturer's recommendations.

The simple cycle combustion turbine is not equipped with SCR and is, therefore, not subject to the inherent control device limitation evident with the combined cycle units. However, manufacturer's guidelines and CEMS data do indicate significantly higher emissions of NO_x, CO, and VOC for this unit during SU/SD.

Normal and SU/SD operational modes are defined as follows:

Normal Operational Mode – Any period of actual unit operation that is not SU/SD (or an upset or malfunction condition). For normal operations, the permitted maximum hourly and average hourly emission rates are equal.

SU/SD Operational Mode – For either the combined cycle or simple cycle units, startup is defined as the time from initial firing to approximately 100 MW which takes approximately 2 to 6 hours depending on type of startup (i.e. cold, warm, or hot). Shutdown is defined from the time the unit is below approximately 100 MW until there is no firing, which takes approximately 1 to 2 hours.

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When the combined cycle turbine reaches approximately 100 MW, the SCR unit can be used to reduce NO_x. Exhaust gas from the turbine is always directed to the HRSG unit where the energy in the exhaust gas is converted to steam, which is piped to the steam turbine. The duct burners are used to provide supplemental heat in the HRSG as needed. The duct burners are only used during periods of normal operation, when the SCR unit is active.

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application and Emission Inventory Questionnaire were submitted by Entergy Louisiana LLC on February 21, 2005 requesting a Part 70 operating permit renewal. Additional information dated March 11, 2009, was also received.

Project

Entergy Louisiana, LLC proposes to renew the Part 70 permit for the Perryville Generating Station. No physical changes or increases in actual emissions are proposed in this modification. All changes in emissions levels are due to addition errors made in the previously effective permit.

Proposed Permit

Permit 2160-00112-V3 will be the renewal of Part 70 operating permit for the Perryville Generating Station.

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Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM ₁₀	297.70	297.70	-
SO ₂	25.70	25.60	- 0.10
NO _x	723.60	723.60	-
CO	1195.20	1195.20	-
VOC	87.55	87.55	-

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

Applicability and Exemptions of Selected Subject Items

ID No.	Requirement	Note
PCS 1 PCS 2	40 CFR 64 - Compliance Assurance Monitoring	EXEMPT. Sources are subject to the requirements of the Acid Rain Program. [40 CFR 64.2(b)(iii)]
EQT 3 EQT 5 EQT 6	Comprehensive Toxic Air Pollutant Emission Control Program [LAC 33:III.Chapter 51]	EXEMPT. Sources are electric utility steam-generating units. [LAC 33:III.5105.B.2]
EQT 7 EQT 8	Comprehensive Toxic Air Pollutant Emission Control Program [LAC 33:III.Chapter 51]	EXEMPT. MACT is not required for emissions of Ammonia, a Class III TAP. [LAC 5109.A.1] Formaldehyde emissions result from the combustion of natural gas, a Group 1 Virgin Fossil Fuel. [LAC 33:III.5105.B.3.a]

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EQT 7 EQT 8 (cont.)	NESHAP YYYY - National Emission Standard for Hazardous Air Pollutants for Stationary Combustion Turbines	DOES NOT APPLY. Source is not located at a major source of Hazardous Air Pollutants. [40 CFR 63.6080]
PCS 1 PCS 2 EQT 3	Control of Emissions of Sulfur Dioxide [LAC 33:III.1503]	EXEMPT. Sources emit less than 100 TPY of SO ₂ . Permittee shall maintain records showing annual potential SO ₂ emissions. [LAC 33:III.1513.C]

Prevention of Significant Deterioration/Nonattainment Review

There are no emissions increases associated with this permit renewal; therefore PSD review is not required.

MACT Requirements

MACT is not required for the Perryville Generating Station. TAP emissions are emitted by five point sources at this facility: 2-1 – Simple Cycle Turbine No. 3 (EQT 3), 1-1 DB/HRSG – Duct Burner/Heat Recovery Steam Generator (EQT 5), 1-2 DB/HRSG – Duct Burner/Heat Recovery Steam Generator (EQT 6), 1-1 GT – Gas Turbine (EQT 7), and 1-2 GT – Gas Turbine (EQT 8). Electric utility steam-generating units (EUSGUs) are not required to incorporate Maximum Achievable Control Technology (MACT) per LAC 33:III.5105.B.2. EQT 3, EQT 5, and EQT 6 are EUSGUs and are therefore not subject to the requirements of MACT. Emissions from the combustion of Group 1 virgin fossil fuels are exempt from the requirement to address MACT per LAC 33:III.5105.B.3.a. Formaldehyde emissions from EQT 7 and EQT 8 are generated by combustion of natural gas, a Group 1 virgin fossil fuel, and are exempted from the requirement to address MACT. MACT is not required for emissions of any Class III TAP, such as ammonia.

Air Quality Analysis

Emissions associated with the proposed renewal were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping

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requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

There is no permit shield.

VI. PERIODIC MONITORING

Compliance Assurance Monitoring – 40 CFR 64

Compliance Assurance Monitoring (CAM) in accordance with 40 CFR 64 is not applicable to this facility.

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H₂S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

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Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀ – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO₂) – An oxide of sulfur.

Sulfuric Acid (H₂SO₄) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.